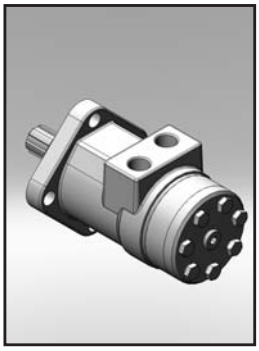
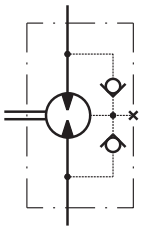
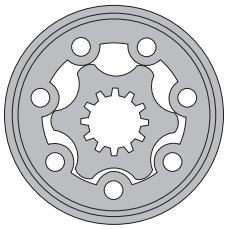
HYDRAULIC MOTORS MLHPL



APPLICATION

» Conveyors
» Feeding mechanism of robots and manipulators
» Metal working machines
» Textile machines
» Agricultural machines
» Food industries
» Mining machinery etc.





CONTENTS

OPTIONS

» Model - Spool valve, gerotor
» Antifriction conical bearing
» Flange mount
» Shafts - straight, splined and tapered
» Metric and BSPP ports
» Other special features

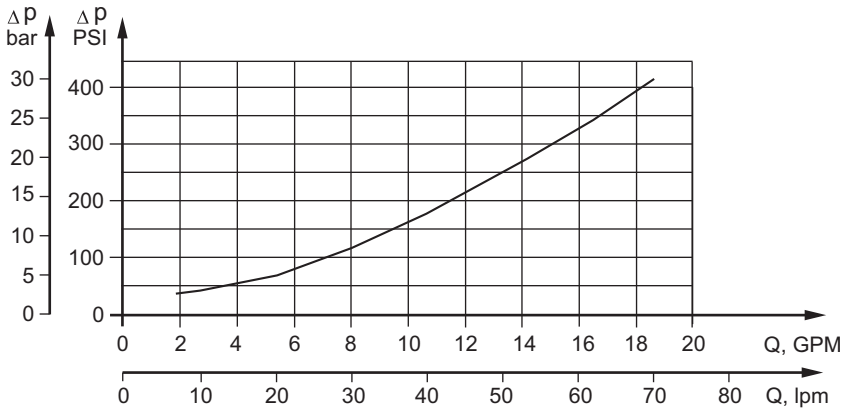
GENERAL

Max. Displacement, in^3/rev [cm^3/rev]	24.16 [396]
Max. Speed, [RPM]	1515
Max. Torque, lb-in [daNm]	cont.: 4415 [50] int.: 5222 [59]
Max. Output, HP [kW]	23.5 [17,5]
Max. Pressure Drop, PSI [bar]	cont.: 2030 [140] int.: 2540 [175]
Max. Oil Flow, GPM [lpm]	20 [75]
Min. Speed, [RPM]	10
Pressure fluid	Mineral based- HLP(DIN 51524) or HM(ISO 6743/4)
Temperature range, ^oF [^oC]	-40÷284 [-40÷140]
Optimal Viscosity range, SUS [mm^2/s]	98÷347 [20÷75]
Filtration	ISO code 20/16 (Min. recommended fluid filtration of 25 microns)

Oil flow in drain line

Pressure drop PSI [bar]	Viscosity SUS [mm^2/s]	Oil flow in drain line GPM [lpm]
1450 [100]	98 [20]	.660 [2,5]
	164 [35]	.476 [1,8]
2030 [140]	98 [20]	.925 [3,5]
	164 [35]	.740 [2,8]

Pressure Losses



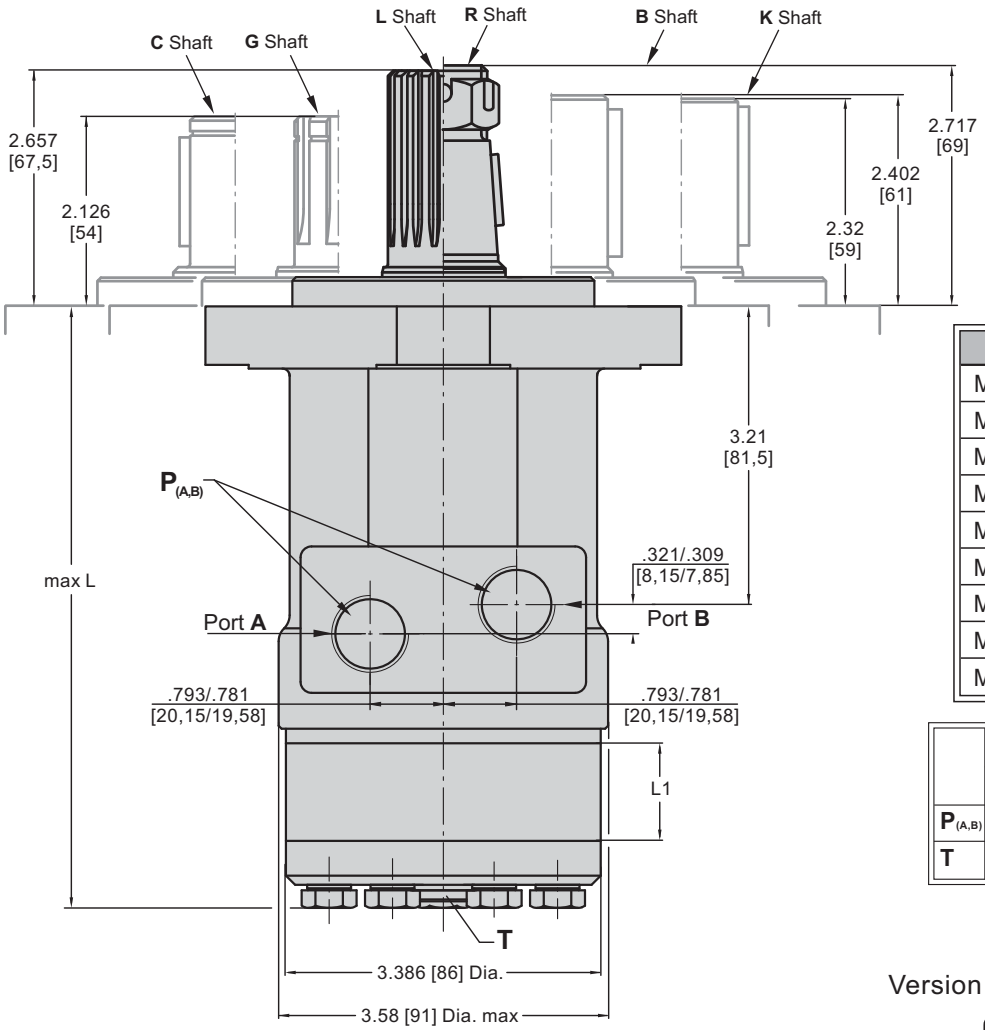
SPECIFICATION DATA

Type		MLHPL 50	MLHPL 80	MLHPL 100	MLHPL 125	MLHPL 160	MLHPL 200	MLHPL 250	MLHPL 315	MLHPL 400
Displacement, in^3/rev [cm^3/rev]		3.02 [49,5]	4.83 [79,2]	6.04 [99]	7.55 [123,8]	9.66 [158,4]	12.1 [198]	15.1 [247,5]	19.3 [316,8]	24.16 [396]
Max. Speed,	Cont.	1210	755	605	485	378	303	242	190	150
[RPM]	Int.*	1515	945	755	605	472	378	303	236	189
Max. Torque	Cont.	832 [9,4]	1336 [15,1]	1708 [19,3]	2100 [23,7]	2770 [31,3]	3240 [36,6]	4160 [47]	4300 [48,6]	4425 [50]
lb-in [daNm]	Int.*	1054 [11,9]	1725 [19,5]	2097 [23,7]	2637 [29,8]	3345 [37,8]	4035 [45,6]	5160 [58,3]	4956 [56]	5222 [59]
	Peak**	1240 [14,0]	1947 [22,0]	2390 [27,0]	3230 [36,5]	3717 [42]	4700 [53]	5930 [67]	7523 [85]	7560 [85,4]
Max. Output	Cont.	13.3 [9,9]	13.3 [9,9]	13.3 [9,9]	13.3 [9,9]	15.7 [11,7]	13.8 [10,3]	13.1 [9,8]	10.2 [7,6]	8.9 [6,6]
HP [kW]	Int.*	16.8 [12,5]	16.8 [12,5]	16.8 [12,5]	16.8 [12,5]	16.8 [12,5]	20.8 [15,5]	23.5 [17,5]	11 [8,2]	12.3 [9,2]
Max. Pressure Drop	Cont.	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	2030 [140]	1300 [120]	1015 [95]
PSI [bar]	Int.*	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2030 [140]	1665 [115]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	2610 [180]
Max. Oil Flow	Cont.	16 [60]	16 [60]	16 [60]	16 [60]	16 [60]	16 [60]	16 [60]	16 [60]	16 [60]
GPM [lpm]	Int.*	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]	20 [75]
Max. Inlet Pressure	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
PSI [bar]	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Return Pressure	Cont. 0-100 RPM	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]
without Drain	Cont. 100-300 RPM	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]	725 [50]
Line or Max. Pressure	Cont. 300-600 RPM	365 [25]	365 [25]	365 [25]	365 [25]	365 [25]	365 [25]	365 [25]	365 [25]	365 [25]
in Drain Line,	Cont. >600 RPM	220 [15]	220 [15]	220 [15]	220 [15]	220 [15]	220 [15]	220 [15]	220 [15]	220 [15]
PSI [bar]	Int.* 0-max. RPM	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]	1450 [100]
Max. Return Pressure	Cont.	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]	2540 [175]
with Drain Line	Int.*	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]	2900 [200]
PSI [bar]	Peak**	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]	3260 [225]
Max. Starting Pressure with Unloaded Shaft, PSI [bar]		145 [10]	145 [10]	145 [10]	131 [9]	116 [8]	100 [7]	87 [6]	73 [5]	73 [5]
Min. Starting Torque lb-in [daNm]		681 [7,7]	1150 [13]	1487 [16,8]	21,0 [1860]	28,0 [2478]	2850 [32,2]	3665 [41,4]	3805 [43,0]	3900 [44,0]
Min. Speed***, [RPM]		10	10	10	10	10	10	10	10	10
Weight, lb [kg]		18.5 [8,4]	18.7 [8,5]	19.4 [8,8]	19.6 [8,9]	20 [9,1]	20.9 [9,5]	22 [10,0]	23.6 [10,7]	25.1 [11,4]

* Intermittent operation: the permissible values may occur for max. 10% of every minute.
** Peak load: the permissible values may occur for max. 1% of every minute.
*** For speeds lower than given, consult factory or your regional manager.

1. Intermittent speed and intermittent pressure drop must not occur simultaneously.
2. Recommended filtration is per ISO cleanliness code 20/16. A nominal filtration of 25 micron or better.
3. Recommend using a premium quality, anti-wear type mineral based hydraulic oil HLP(DIN51524) or HM (ISO 6743/4). If using synthetic fluids consult the factory for alternative seal materials.
4. Recommended minimum oil viscosity 70 SUS [13 mm^2/s] at 122ºF [50ºC].
5. Recommended maximum system operating temperature is 180ºF [82ºC].
6. To assure optimum motor life fill with fluid prior to loading and run at moderate load and speed for 10-15 minutes.

DIMENSIONS AND MOUNTING DATA



Shaft Dim.
See Page 47

Type	L_{max},mm [in]	L_1, in [mm]
MLHPL 50	5.71 [145,0]	.26 [6,67]
MLHPL 80	5.87 [149,0]	.42 [10,67]
MLHPL 100	5.96 [151,5]	.52 [13,33]
MLHPL 125	6.10 [155,0]	.66 [16,67]
MLHPL 160	6.28 [159,5]	.84 [21,33]
MLHPL 200	6.49 [165,0]	1.05 [26,67]
MLHPL 250	6.75 [171,5]	1.31 [33,33]
MLHPL 315	7.13 [181,0]	1.68 [42,67]
MLHPL 400	7.54 [191,5]	2.10 [53,33]

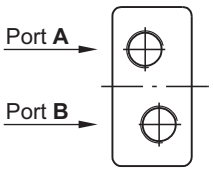
	Versions		
	2	4	5
$P_{(A,B)}$	2xG½	2x⅞-14 UNF	2x½-14 NPTF
T	G¼	7/16-20 UNF	7/16-20 UNF

Standard Rotation
Viewed from Shaft End
Port **A** Pressurized - **CW**
Port **B** Pressurized - **CCW**

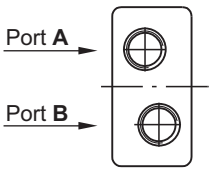
Reverse Rotation
Viewed from Shaft End
Port **A** Pressurized - **CCW**
Port **B** Pressurized - **CW**

Side Ports

Version 2 5

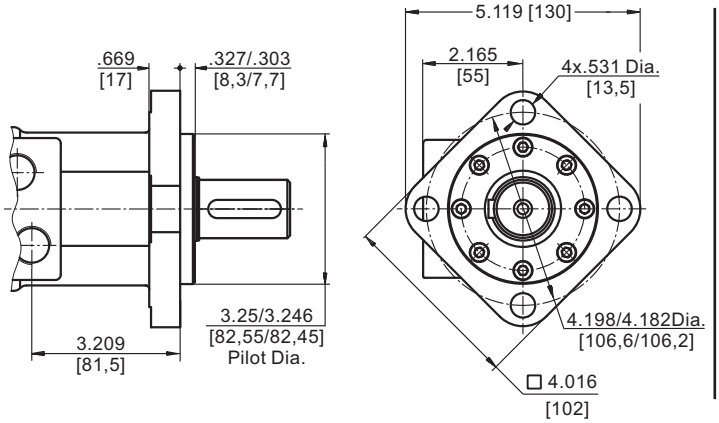


Version 4

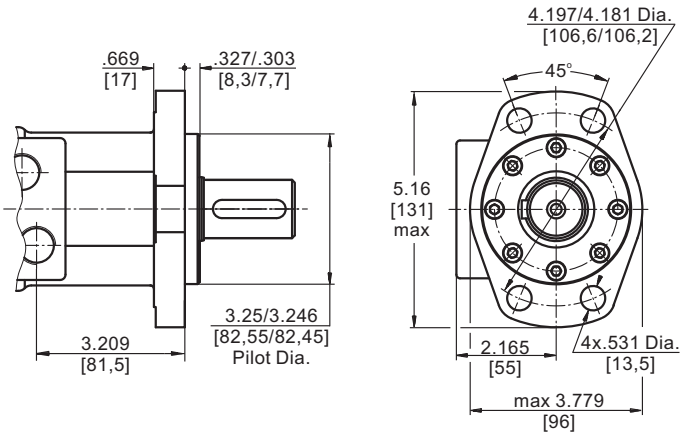


MOUNTING

Square Mount (4 Holes)



F Oval Mount (4 Holes)

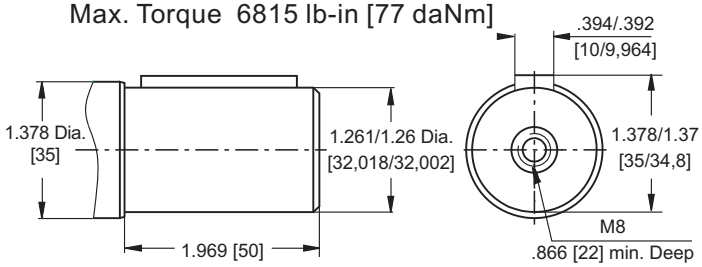


in [mm]

SHAFT EXTENSIONS FOR MLHPL AND MLHRL

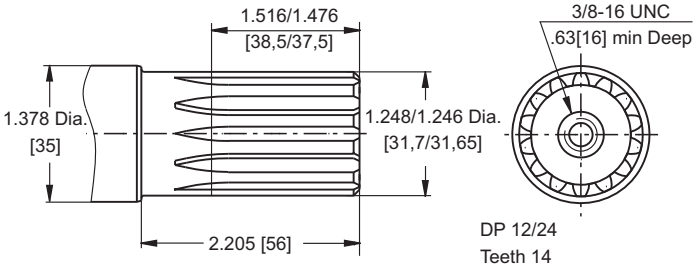
B

ø32 , Parallel key A10x8x40 DIN 6885
Max. Torque 6815 lb-in [77 daNm]



L

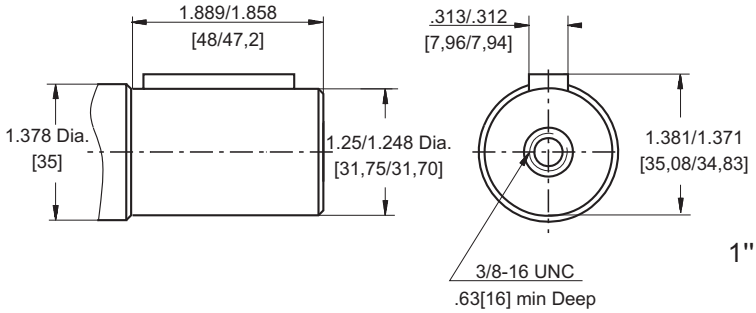
14T Splined, 1¼" [31,75], ANS B92.1-1976
Max. Torque 6815 lb-in [77 daNm]



DP 12/24
Teeth 14
Pressure angle 30°

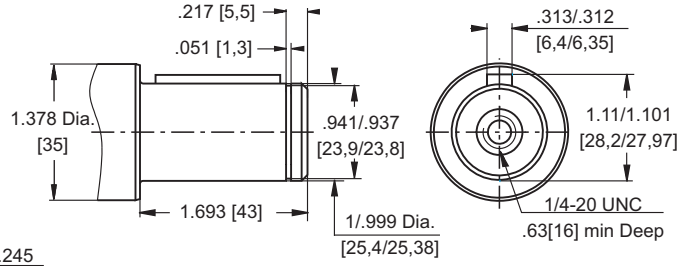
K

1¼" [31,75] straight, Parallel key 5/16"x5/16"x1¼" BS 46
Max. Torque 6815 lb-in [77 daNm]



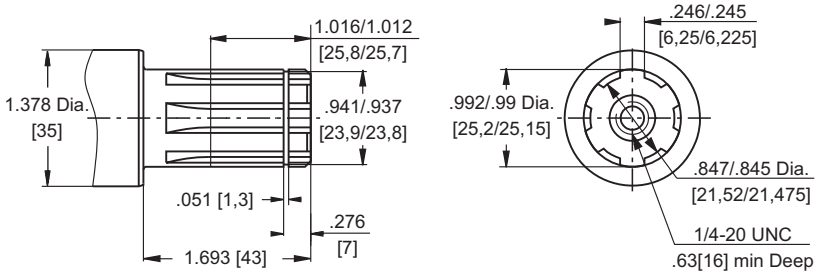
C

1" [25,4] straight, Parallel key ¼"x ¼"x 1¼" BS46
Max. Torque 3010 lb-in [34 daNm]



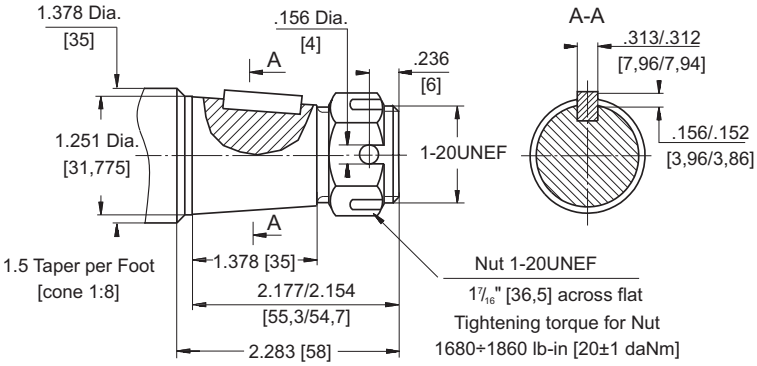
G

1" [25,4], Splined BS 2059 (SAE 6B)
Max. Torque 3010 lb-in [34 daNm]



R

1¼" [31,75],SAE J501 Tapered
Parallel key 5/16"x 5/16"x1"
Max. Torque 6815 lb-in [77 daNm]



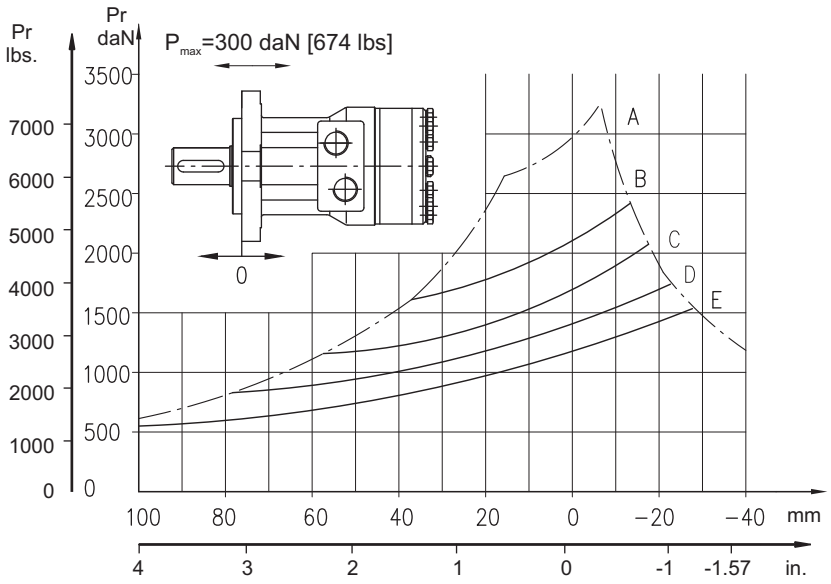
▽- Motor Mounting Surfase

in [mm]

Requirement max. Torque must be not exceeded.

PERMISSIBLE SHAFT LOADS FOR MLHPL AND MLHRL

The curves apply to a B10 bearings life of 2000 hrs



A - Max. radial shaft load.
B - n=50 min^{-1}
C - n=100 min^{-1}
D - n=200 min^{-1}
E - n=400 min^{-1}

ORDER CODE

	1	2	3	4	5	6
M L H P L						

Pos.1 - Mounting Flange

omit - Square mount, four holes
F - Oval mount, four holes

Pos.2 - Displacement code*

50	- 3.02 in^3/rev [49,5 cm^3/rev]
80	- 4.83 in^3/rev [79,2 cm^3/rev]
100	- 6.04 in^3/rev [99,0 cm^3/rev]
125	- 7.55 in^3/rev [123,8 cm^3/rev]
160	- 9.66 in^3/rev [158,4 cm^3/rev]
200	- 12.10 in^3/rev [198,0 cm^3/rev]
250	- 15.10 in^3/rev [247,5 cm^3/rev]
315	- 19.30 in^3/rev [316,8 cm^3/rev]
400	- 24.16 in^3/rev [396,0 cm^3/rev]

Pos.3 - Shaft Extensions**

B	- ø32 straight, Parallel key
K	- 1¼"[31,75] straight, Parallel key
L	- 1¼"[31,75] splined 14T ANS B 92.1-1976
R	- 1¼"[31,75] tapered SAE J 501
C	- ø25,4 straight, Parallel key
G	- ø25,4 splined BS 2059 (SAE 6B)

Pos.4 - Port Size/Type [standard manifold to each]

2	- side ports, 2xG1/2, G1/4, BSP thread, ISO 228
4	- side ports, 2x7/8-14 UNF, O-ring, 7/16-20 UNF
5	- side ports, 2x1/2-14 NPTF, 7/16-20 UNF

Pos.5 - Special Features [see page 102]

Pos.6 - Design Series

omit - Factory specified

NOTES:

* For the Function Diagrams please look at "M+S Hydraulic" Catalogue for MLHP motors, pages 19÷23.
** The permissible output torque for shafts must not be exceeded!

The hydraulic motors are mangano-phosphatized as standard.